

# NUCOR

VULCRAFT – UTAH  
COLD FINISH – UTAH  
WIRE PRODUCTS – UTAH



October 30, 2012

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UTAH DEPARTMENT OF  
ENVIRONMENTAL QUALITY

OCT 31 2012

DIVISION OF AIR QUALITY

Subject: Comments regarding the proposed State Implementation Plan for the 2006 24-hour NAAQS for PM 2.5.

To Whom it May Concern:

We are submitting comments regarding the proposed State Implementation Plan (SIP) for the 2006 24-hour NAAQS for PM 2.5, and the proposed rules and control strategies to achieve PM 2.5 reductions by 2019.

Nucor Corporation operates four divisions in Brigham City, Box Elder County, Utah. A Vulcraft division, which designs and manufactures steel joists and girders, a Cold Finish division that produces cold drawn steel shapes, a Wire Products division that manufactures wire mesh, and Nucor Building Systems that designs and fabricates metal buildings. Collectively, these will be referred to as Nucor Products Divisions.

The comments we are submitting represent the questions and concerns from these facilities, in particular how the proposed strategies and rules will impact our ability to operate in the state of Utah, and remain competitive in the years ahead.

This facility understands that while Box Elder County lies within the boundaries of the non-attainment area for PM<sub>2.5</sub>, the majority of the actual contributions to PM<sub>2.5</sub> come from counties to the south, particularly Salt Lake, Weber and Davis counties.

In a presentation to Box Elder County by UDAQ in April 2012, it was noted that "DAQ will verify a strategy is necessary in each county before implementing it." And then in subtext below that bullet point it says "Box Elder County will not have to do everything SL County does". However, the proposed regulations do not incorporate that point. This facility believes that a strategy to restrict point sources in

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Box Elder County to reduce VOC's has not been shown by UDAQ to be necessary in order to meet current or future PM2.5 attainment levels.

Nucor Products Divisions understand that UDAQ has determined that the bulk of the particulate identified as being PM2.5 is ammonium nitrate. The facility also understands from a conversation with staff that a likely source of a significant percentage of the ammonium is from farming operations. While we recognize that reducing emissions of ammonia from agricultural sources would be difficult, we believe that the State should focus on reduction strategies that would have a greater impact on the actual primary sources of contributions to PM2.5 than mandating an arbitrary reduction in the VOC content of paint coatings.

We understand that the EPA requires states to provide a state-specific demonstration that VOC emissions contribute to PM2.5. However, we are not aware that this has occurred.

Nucor Product Divisions are currently regulated by both state and federal regulations that have required controls to paint materials and processes, that have already resulted in significant reductions in VOC's over the last 2 decades. Since 1998, as a result of the installation of new equipment, developing hybrid low VOC paints, and complying with the air permit program administered by UDAQ, we have effected reductions by over 80% in VOC's emitted per ton of joist products produced. This impressive reduction occurred due to a combination of the current and effective state regulatory environment and the ongoing commitment of Nucor Product Divisions to be environmental leaders in their communities by going above and beyond the requirements of the regulations.

Further restrictions from the proposed rule "R307-350 Miscellaneous Metal Parts and Products Coatings" would limit needed operational flexibility, and would add additional cost without providing any benefit toward lowering PM2.5 levels in Box Elder, Weber, Davis and Salt Lake County.

We do not believe that the proposed additional VOC regulations are necessary to control PM2.5 in our communities.

In addition, we have the following comments and concerns specifically regarding R307-350 "Miscellaneous Metal Parts and Products Coatings", if it was applied to our facilities.

1. The definition of "Baked Coating" was unclear. We understand that UDAQ uses an oven box temperature of 190 Deg F as their definition of "baked". Nucor Building System's drying ovens exceed that temperature in the oven box itself. However, the Metals Building Industry has never considered the drying oven to serve a "baking" function. Instead, the drying ovens merely serve to speed up the drying, allowing the painted parts to be handled in minutes, instead of one to two hours. UDAQ appears to believe that VOC emissions are greater for a given paint used in a "baking oven" as compared to air drying. That is not accurate. Please review our Item 3 below. We believe that the resolution of this issue should involve increasing the proposed new VOC limit for baked coatings to match the VOC limit for air dried coatings.

2. UDAQ's defined paint limit for VOC is "less water". While we understand that this is the traditional EPA approach to the VOC calculation, it gives a misleading result in the State's model. For example, a



coating recently placed into service at NBS Utah has a "coating" VOC level of 2.176 lbs/gal less water, while the "material" (as applied) VOC is only 1.002 lbs/gal. The 2.176 lb/gal. number would be the one that UDAQ's regulation would limit, even though our facility's real emissions would only be 1.002 lb/gal. This actually penalizes a facility that has chosen to use a water-based coating in order to reduce environmental emissions. Continuing our example further, we could consider switching to a solvent-based coating having an actual VOC level of 2.00 lbs/ gal, and this coating would appear to be better than the water-based coating, even though actual emissions would be nearly double. This is clearly not what we believe that the State intended. The best resolution of this issue would be to apply the proposed limits to the VOC level "as applied".

3. During the informal comment period, UDAQ had a discussion with Dave Oakden, former NBS-UT Environmental Coordinator, regarding the acceptability of the proposed limits. Dave's comment regarding acceptability referenced an "as applied" limit, not a limit on the coating "less water". The potential limit of 2.3 lbs/gallon, less water is not a limit that we can operate under in the future. It will have a significant impact on the future viability of Vulcraft's and Nucor Building System's operations.

4. Evaporative loss. In earlier discussions with UDAQ we talked about why "baked" coatings had a lower limit than air-dried. Mr. Karmazyn stated that this was because such coatings emitted more VOCs. We respectfully disagree. Our ovens merely speed up the drying process, reducing the time it takes for coatings to become dry enough for the part to be handled. They do not result in increased emissions. In order for a difference in the proposed VOC limits to make sense, one would have to assume that the parts left the non-attainment area prior to the emissions of all of the VOCs, resulting in VOC emissions continuing into a nearby attainment area. This is not the case. We have previously submitted to UDAQ a document from Century Coatings, one of our suppliers, demonstrating that 100% of the VOCs are emitted in as little as 80 minutes of air drying time. A copy of that letter is again provided for reference. This supports our position that 100% of the VOCs are emitted at both Vulcraft and Nucor Building Systems prior to the parts leaving the site. Therefore, there should be no difference in the limits for air dried versus baked coatings. We recommend that the baked coating limit match the air dried limit of 2.8 lbs/gal.

5. The exception for touch up and repair coatings from spray cans should be expanded to exempt these devices from all sections of the proposed regulation. As currently written, we believe that the exemption could be interpreted as only applying to the application method, not the VOC content. Spray coatings are used sparingly, often amounting to less than ten gallons per month, but usually are only available with a higher VOC concentration. We request this section of the regulation be revised to exempt aerosol cans from all requirements of the proposed regulation.

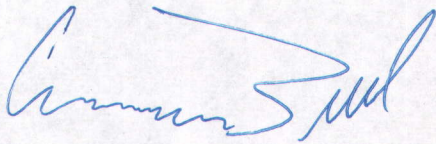
6. In a previous e-mail communication received on August 8<sup>th</sup>, 2012 from UDAQ's Joel Karmazyn, he indicated that he was seeking a more detailed explanation from EPA regarding why they have suggested different limits for air-dried versus "baked" coatings. We have not yet received this information. Please share that information with us as soon as it is available.

In summation, we would recommend that the State of Utah remove applicability of the proposed R307-350 rule to Box Elder County until such time in the future when the state can demonstrate that the VOC's from point sources in this county would have an impact in reducing PM 2.5 levels in the Salt Lake County non-



attainment area. If the impact can be demonstrated, we would suggest that the proposed rule be revised and opened for public comment to ensure that it is effective and will not adversely impact industry to an extent greater than is necessary to achieve applicable air quality goals.

Sincerely,



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# Century Industrial Coatings, Inc.

## Research and Development Lab

UTAH DEPARTMENT OF  
ENVIRONMENTAL QUALITY

OCT 31 2012

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DIVISION OF AIR QUALITY  
August 10, 2010

### **[REDACTED] - Determination of Solvent Loss from 220-Series NULO Primers**

#### Scope:

The non-volatile weight change of Century's 220-Series NULO Primers was determined using ASTM D-2369- Standard Method for Determining the Volatile Content of Coatings.

#### Materials and Methods:

Using an analytical balance, between 0.5000 and 1.0000 grams of NULO coating material was deposited into a tare weighed aluminum dish and recorded as the initial sample weight. The sample was removed from the balance chamber and allow to air dry at ambient pressure and room temperature 77°F (actual 74°F - 80°F) and 45%-50% Relative Humidity.

At five minute intervals after the initial weighing the sample was re-weighed and the new weight recorded. After 90 minutes elapsed the sample was re-weighed at thirty minute intervals and the new weight recorded. A total of twenty-two weight measurements were performed over a 3 hour period.

The data was converted to the percent of solvent loss over time and listed in table form.

Product = 220-D-344 [REDACTED] Gray NULO Spray Primer. This is a waterbased fast dry primer that has 0.54 lbs /gallon (64.69 grams/ liter) (4.7% by weight) of VOC, 65.55% Non-Volatile weight solids and a density of 11.33 lbs/gallon.

The raw data used for this determination are:

NULO primer / Aluminum dish weight = 2.8893 grams

Aluminum weighing dish weight = (1.9239) grams

0.9654 grams of 220-D-344 NULO material

$(0.9654\text{grams}) \times 65.55\% (0.6555) = 0.6328$  = expected non-volatile weight remaining after all the water and solvents evaporate.

When a weighing result reaches approximately 0.6328 grams and the result stabilizes for two or more consecutive weightings, then 100% of the water and solvent are considered to have evaporated. Weightings were conducted in five minute intervals for the first 90 minutes after capturing the initial weight amount. After 90 minutes, weightings were conducted in thirty minute intervals.

#### Results:

Table #1:

Time	Weight	Percent Water / Solvent Loss
Sample Initial weight =	0.9654 grams	= 100% of solvent and water remaining in the sample
0 minutes	0.9654 grams	= 0.0% of solvent loss
5 minutes	0.8706 grams	= 28.50% of solvent loss
10 minutes	0.8551 grams	= 33.16% of solvent loss
15 minutes	0.8376 grams	= 38.42% of solvent loss
20 minutes	0.8023 grams	= 49.03% of solvent loss
25 minutes	0.7198 grams	= 73.84% of solvent loss
30 minutes	0.6532 grams	= 93.87% of solvent loss



**Results:** (continued)

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<b><u>Table #1:</u></b>	<b>Time</b>	<b>Weight</b>	<b>Percent Water / Solvent Loss</b>
	35 minutes	0.6471 grams	= 95.70% of solvent loss
	40 minutes	0.6450 grams	= 96.33% of solvent loss
	45 minutes	0.6437 grams	= 96.72% of solvent loss
	50 minutes	0.6421 grams	= 97.20% of solvent loss
	55 minutes	0.6399 grams	= 98.86% of solvent loss
	60 minutes	0.6384 grams	= 98.32% of solvent loss
	65 minutes	0.6341 grams	= 99.61% of solvent loss
	70 minutes	0.6335 grams	= 99.79% of solvent loss
	75 minutes	0.6329 grams	= 99.98% of solvent loss
	80 minutes	0.6326 grams	= 100.00% of solvent loss
	85 minutes	0.6324 grams	= 100.00% of solvent loss
	90 minutes	0.6326 grams	= 100.00% of solvent loss
	120 minutes	0.6325 grams	= 100.00% of solvent loss
	150 minutes	0.6326 grams	= 100.00% of solvent loss
	180 minutes	0.6323 grams	= 100.00% of solvent loss

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**Discussion and Conclusions:**

Based upon these data, under these conditions, it can be assumed that after 70 minutes of air dry that nearly 100% (99.97%) of the water and solvent have evaporated from the NULO paint film without added heat or forced air movement.

After 10 minutes approximately 33% of the water and solvent have evaporated from the coating and approximately 67% of the water and solvent remain in the forming film.

After 30 minutes approximately 94% of the water and solvent have evaporated from the coating and approximately 6% of the water and solvent remain in the forming film.

After approximately 60 minutes approximately 98% of the water and solvent have evaporated from the coating and approximately 2% of the water and solvent remain in the forming film.

Submitted by:

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August 9, 2010